Application No. 09/888,727
Reply to Office Action mailed October 8, 2003

Amendments to the Specification:

Please add the following two new paragraphs before paragraph [0008] beginning on page 2:

The present invention is directed to a method of controlling a flow of a fluid sample, comprising: providing a first fluid as a flow in a microfluidic channel; and sheathing the first fluid with a second fluid having a known viscosity, such that the first fluid has a flow rate that is substantially equal to a flow rate of the second fluid at the interface with the first fluid. In further embodiments, sheathing the first fluid includes injecting the second fluid into the channel at least partially around the first fluid. In further embodiments, either, the second fluid is injected on either side of the first fluid in a two-dimensional sheath flow or the second fluid completely surrounds the first fluid in a three-dimensional sheath flow. In more specific embodiments, the three-dimensional sheath flow has a rounded cross-sectional profile or a squared cross-sectional profile.

The present invention is also directed to a method of controlling a flow of a fluid sample, comprising: providing a first fluid as a flow in a microfluidic channel, the first fluid having an unknown or variable viscosity; and sheathing the first fluid with a second fluid having a known viscosity, such that the first fluid has a flow rate that is substantially equal to a flow rate of the second fluid at the interface with the first fluid. In a further embodiment, the known viscosity of the second fluid is adapted for maintaining a particular flow rate for the first fluid in the microfluidic channel.